

What is claimed is:

1. A voltage controlled oscillator, comprising:
  - a resonant section that oscillates an alternating-current signal, said resonant section comprising:
    - 5 a pair of output terminals;
    - an inductor connected between said pair of output terminals;
    - a variable capacitor parallelly connected to said inductor;
  - 10 a pair of capacitors, where one electrode of each capacitor is severally connected to said pair of output terminals;
  - 15 a pair of first switches, where each switch is severally provided between the other electrode of the pair of capacitors and a reference electrode; and
  - a second switch provided between the other electrodes of said pair of capacitors; and
  - a negative resistance section that is provided between said resonant section and a power source and
- 20 supplies an electric current to said resonant section synchronously with said alternating-current signal.
2. The voltage controlled oscillator according to Claim 1, wherein said first and second switches are a type of transistor selected from a group that consists of NMOS transistors, PMOS transistors and CMOS transistors.
- 25 3. The voltage controlled oscillator according to Claim 1, wherein said variable capacitor is varactor device to which a control voltage is input and whose capacitance

varies according to the control voltage.

4. The voltage controlled oscillator according to  
Claim 1, wherein said inductor is a spiral inductor formed  
on a substrate.

5       5. The voltage controlled oscillator according to  
Claim 1, wherein said power source has high potential wiring  
and low potential wiring, said pair of output terminals  
essentially consists of a first output terminal and a second  
output terminal, and said negative resistance section

10     comprises:

a first section, said first section has:

15     a first P-channel transistor, in which one of  
source/drain is connected to said high potential  
wiring, the other one is connected to said first  
output terminal, and a gate is connected to said  
second output terminal; and

20     a second P-channel transistor, in which one of  
source/drain is connected to said high potential  
wiring, the other one is connected to said second  
output terminal, and a gate is connected to said  
first output terminal; and

a second section, said second section has:

25     a first N-channel transistor, in which one of  
source/drain is connected to said low potential  
wiring, the other one is connected to said first  
output terminal, and a gate is connected to said  
second output terminal; and

a second N-channel transistor, in which one of

source/drain is connected to said low potential wiring, the other one is connected to said second output terminal, and a gate is connected to said first output terminal.

5       6. The voltage controlled oscillator according to  
Claim 1, wherein said oscillator is the local oscillator of  
a phase locked loop circuit.